SLAC Magnetic Measurements

Planar Insertion Device Analysis

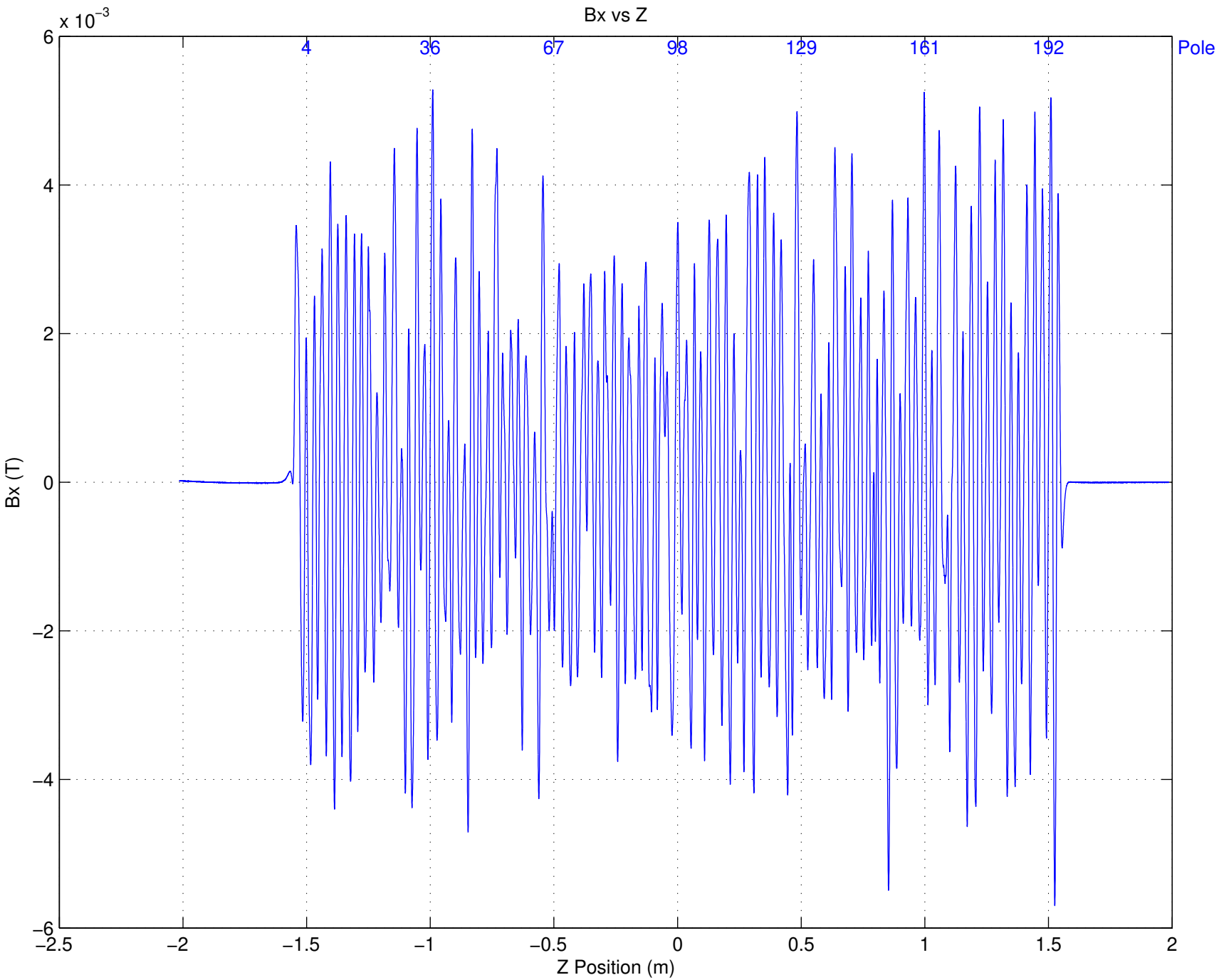
SLAC Magnetic Measurements
Date: 09−18−2014
Time: 15:45:26

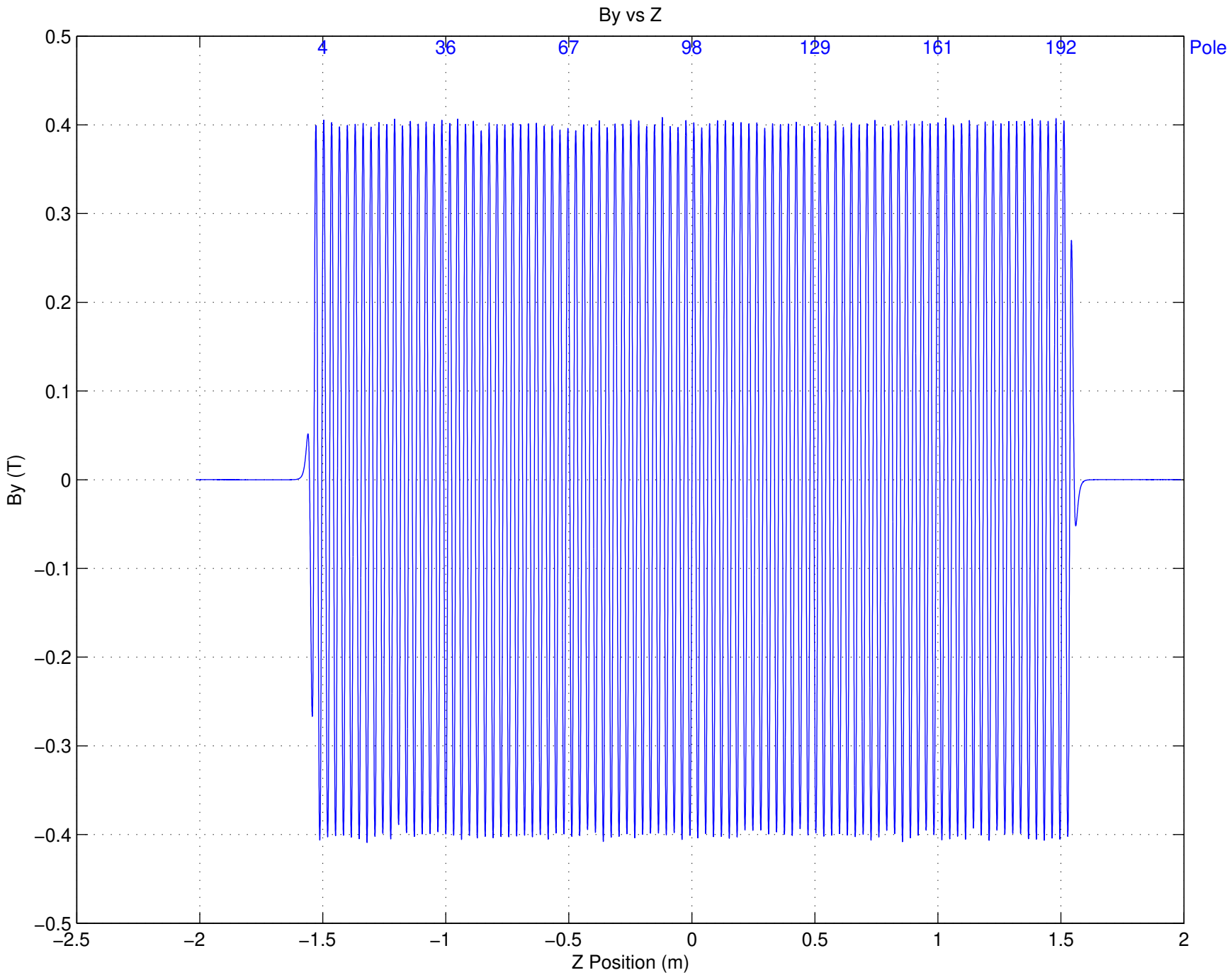
Project: LCLS
Device Type: Undulator
Data Type:
Serial Number: DELTA
DATASET Number: 7
Tuning Stage: Fine Tuning
Run Number: 17
Measurement Type: Z Scans
Operator: YL
Comment: Q4 tuning; #330 −20, #382 −60
Session first run: 3
Measurement Device x:
Measurement Device y: $SENTRON_4$41

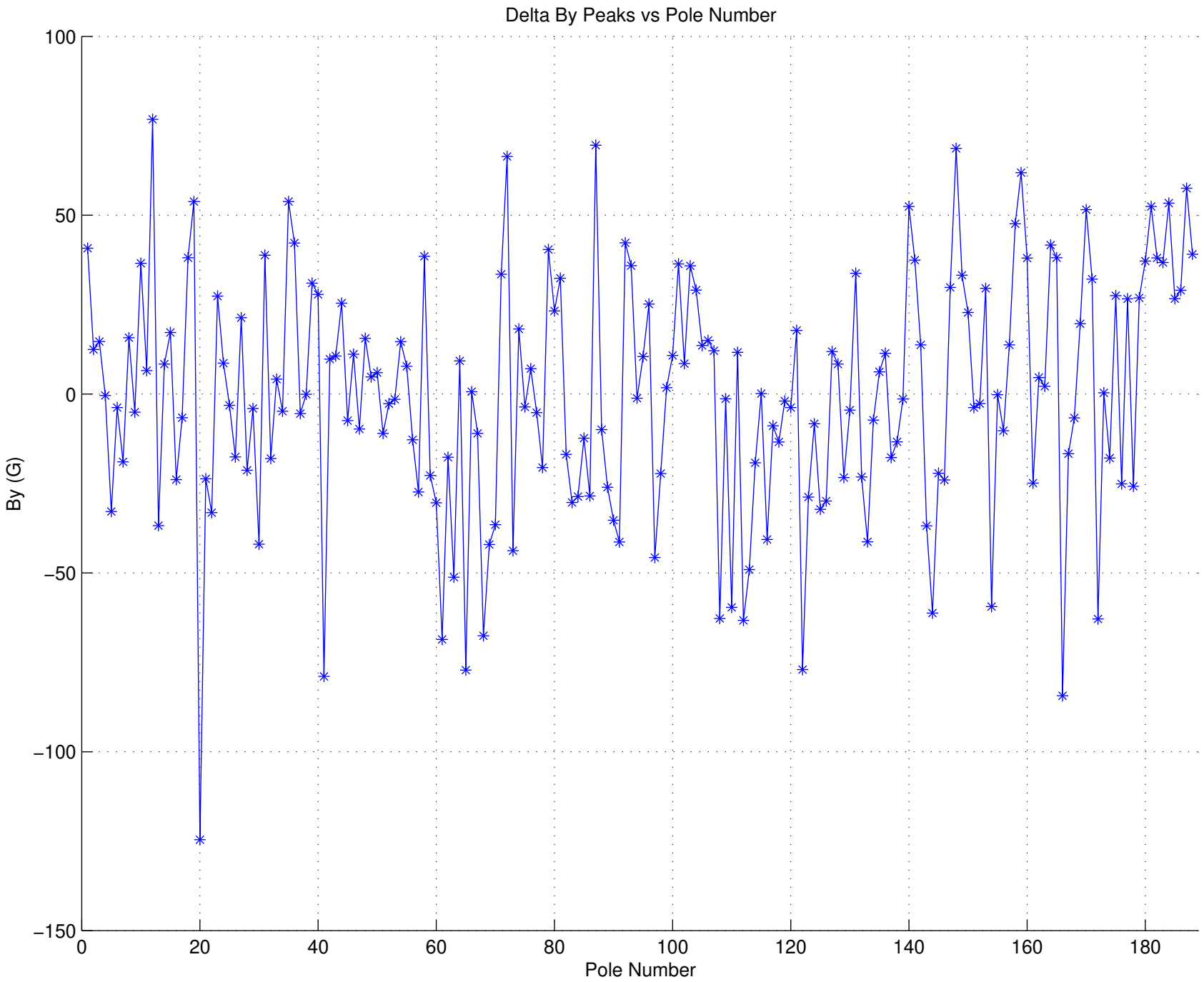
Data File: s:\magdata\LCLS\Undulator\DELTA\DATASET0007\Fine Tuning\Z Scans\Run 017\bscanz.dat

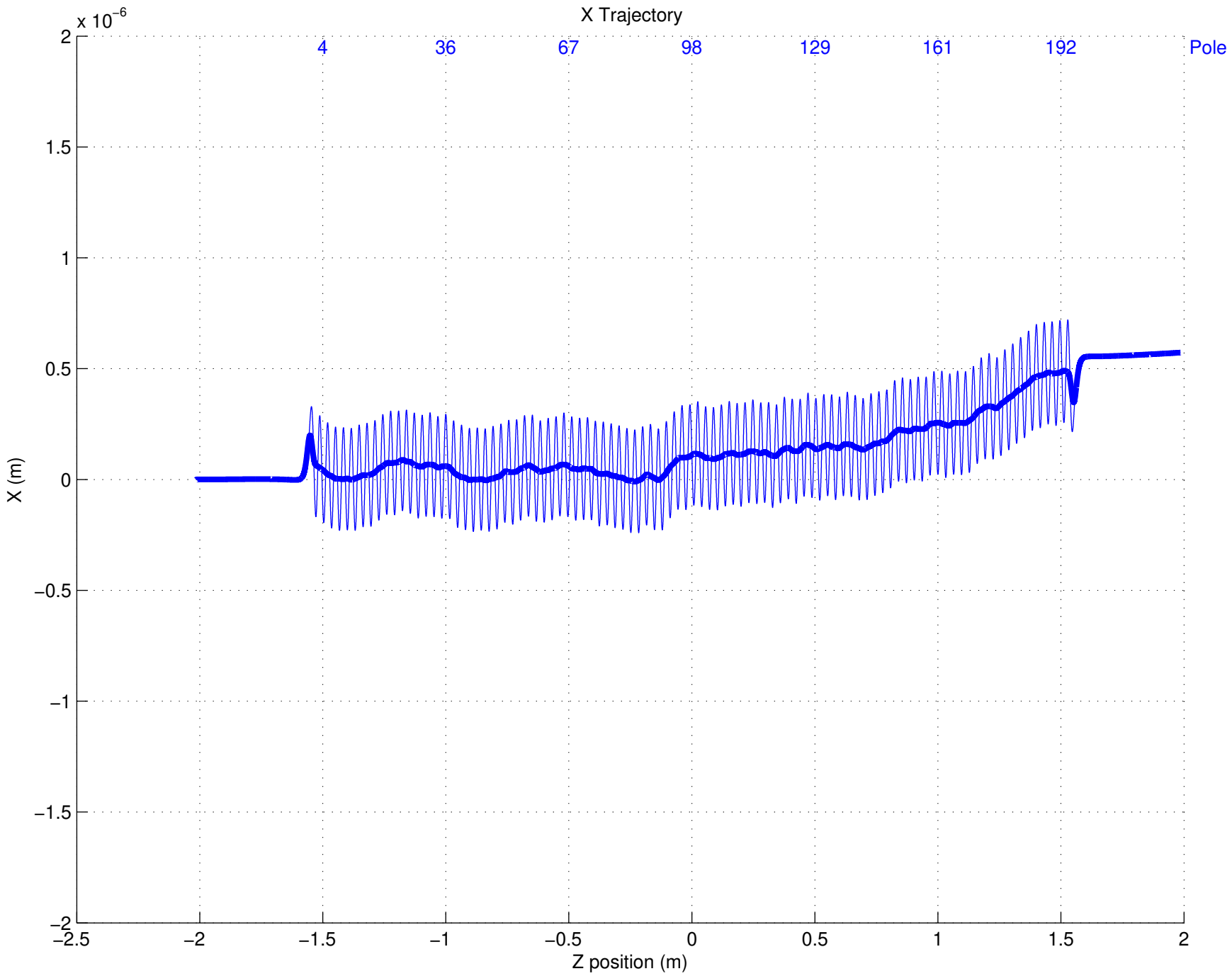
Temperature (C)
DELTA:−−> T1 20.14 −−> T2 20.16 −−> T5 20.05 −−> T3 20.12 −−> Air 20.09 −−> T4 20.13

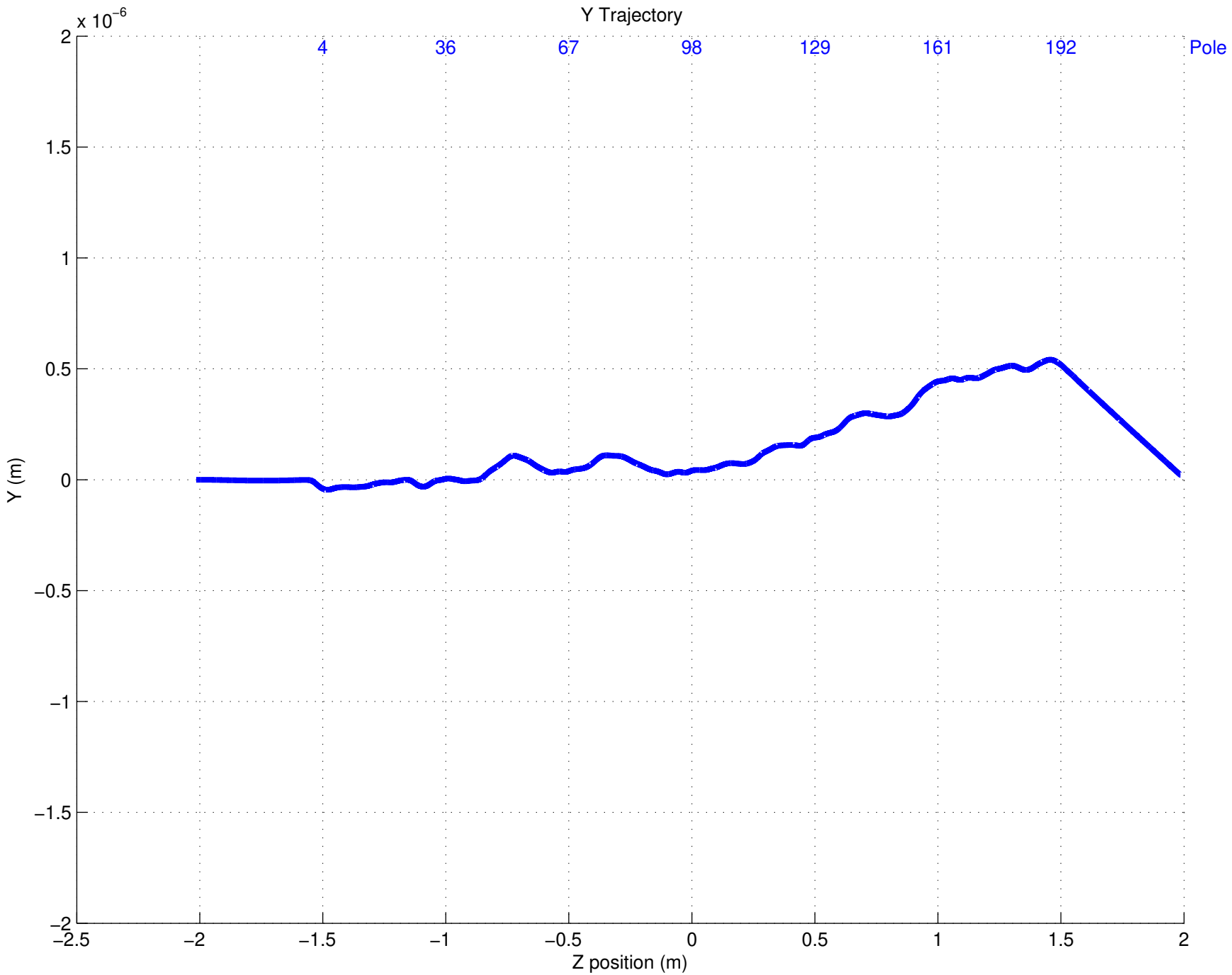
Axes position (m) X:0.021636 Y:0.000201
Initial Hall Probe Zero Measurements:
$Vx_0i$ = 0.001228 V
$Vy_0i$ = −0.002881 V

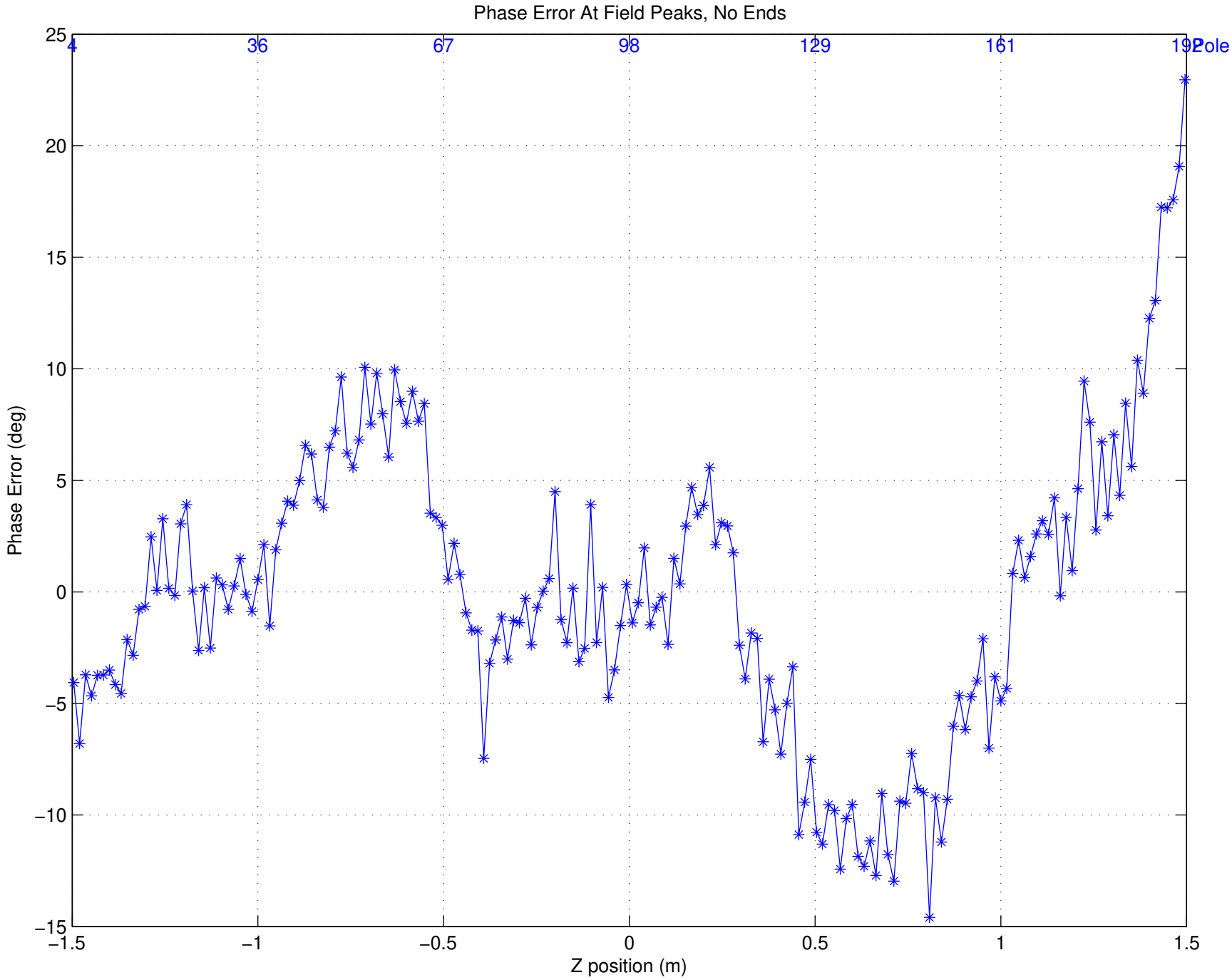

Bx vs Z
x 10^-3
6
4
2
0
−2
−4
−6
Bx (T)
4
36
67
98
129
161
192
Pole
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z Position (m)


By vs Z
4
36
67
98
129
161
192
Pole
0.5
0.4
0.3
0.2
0.1
0
−0.1
−0.2
−0.3
−0.4
−0.5
By (T)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z Position (m)

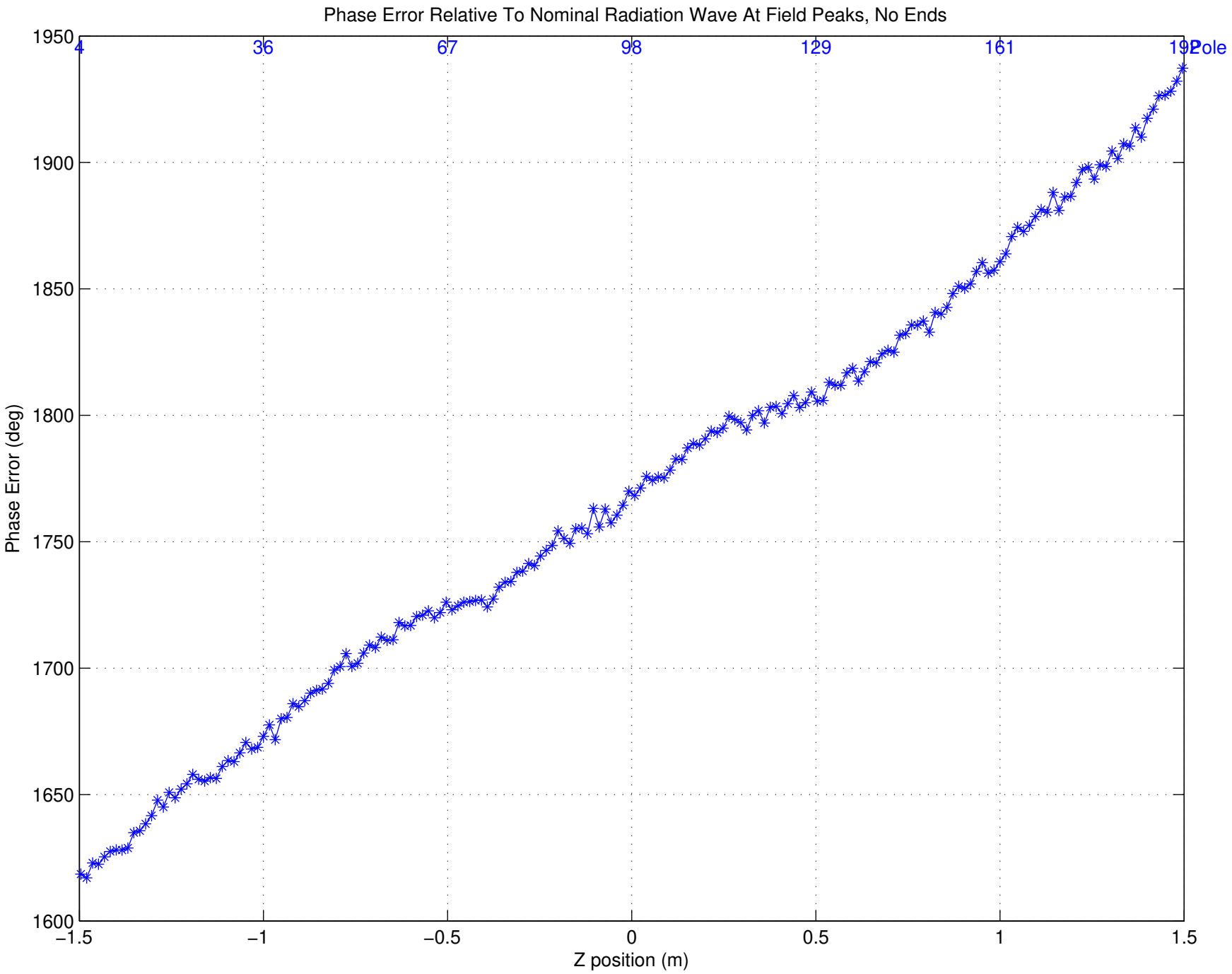

Delta By Peaks vs Pole Number
By (G)
Pole Number
100
50
0
−50
−100
−150
0
20
40
60
80
100
120
140
160
180


X Trajectory
x 10^-6
4
36
67
98
129
161
192
Pole
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
X (m)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)


Y Trajectory
x 10^-6
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
4
36
67
98
129
161
192
Pole
Y (m)
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
Z position (m)




Phase Error: Ave = 0.000000 deg, RMS = 6.553379 deg


Phase Error Relative To Nominal Radiation Wave At Field Peaks, No Ends
4
36
67
98
129
161
192
Pole
1950
1900
1850
1800
1750
1700
1650
1600
Phase Error (deg)
−1.5
−1
−0.5
0
0.5
1
1.5
Z position (m)